

REMARKS

Applicants acknowledge receipt of a Final Office Action dated April 19, 2007. In this response, Applicants have amended the specification to correct certain typographical errors. Applicants provide a more detailed explanation of the amendments to the specification below.

In addition, Applicants have amended claim 1 incorporating, *inter alia*, the language of claim 13, which has been cancelled without prejudice or disclaimer since the amendment to claim 1 renders it redundant.

Applicants are filing a Request for Continued Examination herewith in order to have the amendments entered and fully considered.

Following entry of these amendments, claims 1-12 and 14-49 are pending in the application. Claims 14-48 have been withdrawn as being drawn to non-elected subject matter, thus, claims 1-12 and 49 are currently pending and under consideration.

Applicants respectfully request reconsideration of the present application in view of the foregoing amendments and in view of the reasons that follow.

Personal Interview Conducted on July 17, 2007

During a personal interview conducted on July 17, 2007, Examiner Patterson and Mr. Paul Strain discussed the outstanding objections and rejections related to claim 49 as well as the outstanding prior art based rejections.

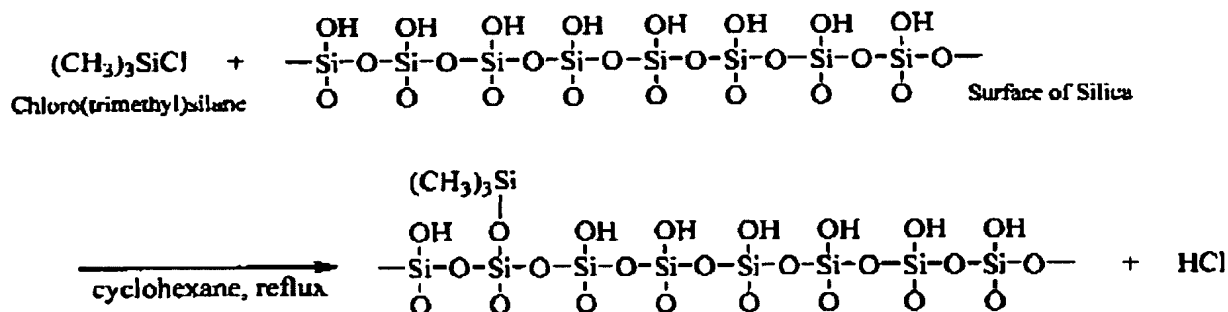
Amendments to Specification

In this response, Applicants have amended the last full paragraph on page 39 to insert the percentages of various group (hydrophobic, polar, and hydroxyl) with the values from the table in Figure 19. In addition, Applicants have replaced the term “2-aminoethylaminomethyldimethylsilyl” with the term “3-aminopropylsilyl.”

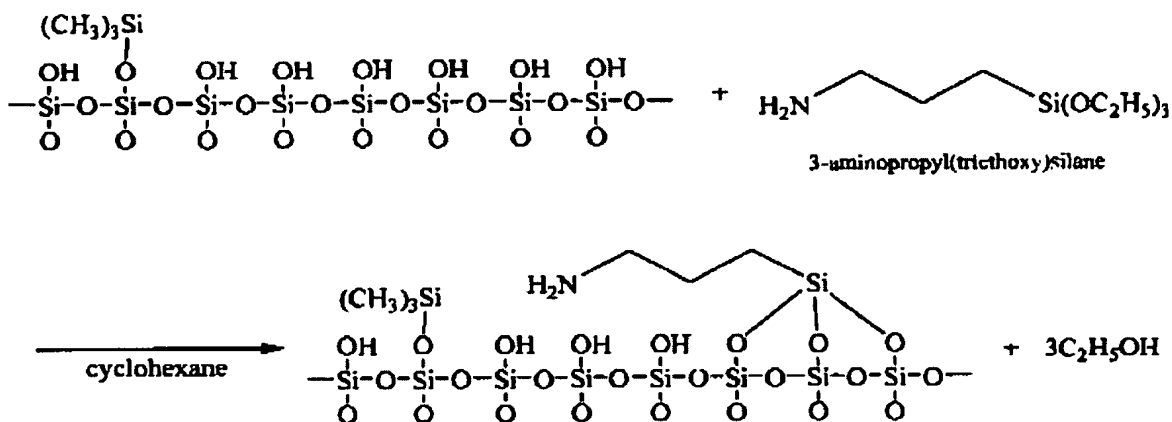
The discussion at page 39, lines 4-28 of the specification explains the preparation of aminated hydrophobic silica of Ex. 1-i. Thus, it is clear that the passage at page 39, lines 24-28 explains percentages of the trimethylsilyl group (hydrophobic group), amino group (polar group), and unreacted hydroxyl group of aminated hydrophobic silica of Ex. 1-i from Figure 19 and does not relate to the trimethylsilyl group, ether group, and unreacted hydroxyl group

of etherified hydrophobic silica of Ex. 1-ii. The compositions listed in the sentence bridging pages 39 and 40 relate to the table in Figure 19 as follows: Ex. 1-ii is etherified hydrophobic silica, Ex. 1-iii is esterified hydrophobic silica, Ex. 1-iv is nitrated hydrophobic silica, Ex. 1-v is cyanated hydrophobic silica, and Ex. 1-vi is epoxylated hydrophobic silica.

With respect to the exemplary description, at page 39, lines 4-16, of the synthesis of silica having a surface which has been rendered hydrophobic, the following reaction occurs:



With respect to the exemplary description, at page 39, lines 17-28, of the aminating treatment, the following reaction occurs:



In view of the foregoing discussion, Applicants respectfully request entry of the amendment

Claim 49

On page 2 of the Office Action, the PTO has objected to the amendment filed on January 18, 2007 as allegedly introducing new matter into the disclosure. Specifically, the PTO has alleged that the range of claim 49 is not disclosed in the original specification. Applicants respectfully traverse this objection.

In addition, on page 2 of the Office Action, the PTO has rejected claim 49 under 35 U.S.C. § 112, 1st paragraph as allegedly failing to comply with the written description requirement.

Finally, on page 3 of the Office Action, the PTO has rejected claim 49 under 35 U.S.C. § 112, 2nd paragraph as allegedly being indefinite.

The objection to the specification and the two rejections under §112 are ultimately tied to Applicants introduction of claim 49 in the last response. Claim 49 recites that “a percentage of the polar group other than the hydroxyl group in the oxidized compound is within a range of 80 to 90% based on the whole of the hydroxyl group and the polar group other than the hydroxyl group.” As set forth below and as discussed during the interview, Applicants respectfully traverse the objection to the specification and the rejections under §112.

Page 39, lines 24-28 of the specification, as amended, states:

Analysis of total nitrogen, XPS, NMR and FT-IR revealed that the modified surface had groups consisting of 50% of trimethylsilyl group (hydrophobic group), 45% of 2-aminoethylaminomethyldimethylsilyl group (polar group) and 5% of unreacted hydroxyl group.

The percentage referenced in claim 49 results from a calculation based on the percentage amounts of certain groups (hydrophobic, polar, and hydroxyl) present on the modified surface as determined using the analytical techniques referenced in the specification. Using the cited passage of the specification as an example, the percentage referenced in claim 49 would be calculated as follows: $(45\% \text{ polar group}) / (45\% \text{ polar group} + 5\% \text{ hydroxyl group}) = 90\%$.

Applicants request reconsideration and withdrawal of the outstanding objection to the specification as well as reconsideration and withdrawal of the outstanding rejections under §112 in view of the foregoing explanation.

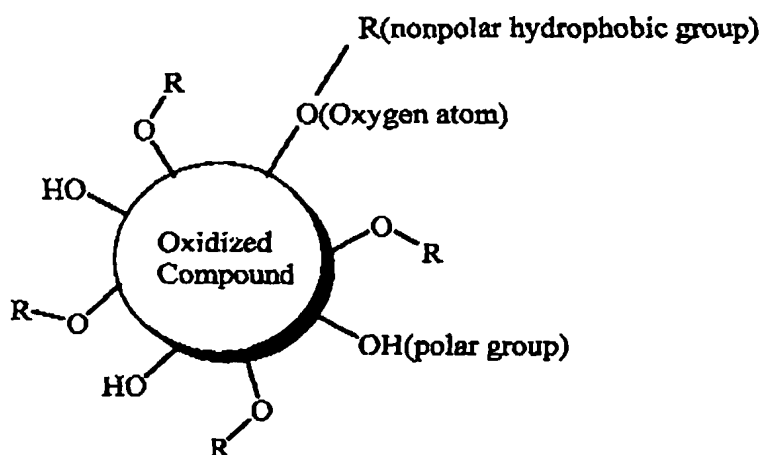
Rejection Under 35 U.S.C. § 102

On page 3 of the Office Action, the PTO has maintained its rejection of claims 1-9, 11-13, and has rejected claim 49 under 35 U.S.C. § 102(b) as allegedly being anticipated by EP 0 885 937 to Zaima *et al.* (hereafter “Zaima”). Applicants traverse this rejection for the reason set forth below.

A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. *Verdegaal Bros. v. Union Oil Co. of California*, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). See generally MPEP § 2131.

Here, Zaima fails to disclose “an oxidized compound having a hydrophobic group and a polar group which are directly bonded to a surface thereof” as recited in amended independent claim 1.

As set forth in independent claim 1, “R represents a non-polarized group.” This means that R does not contain polar groups such as, for example, hydroxyl groups or ether groups, because when a polar group is part of R, R has polarity as a whole (refer to page 7, lines 2-10 of the present specification). If R has polarity as a whole, the repulsive force between the group -OR and the thermoplastic resin becomes insufficient, and thus the filler cannot be dispersed uniformly in the thermoplastic resin. The following figure shows an illustrative example of the presently claimed oxidized compound:



In contrast to the presently claimed invention, Zaima discloses a reactive particle represented by the following formula:



where A is a carrier particle. As the carrier particle, an inorganic particle can be used (see page 3, lines 35-36 of Zaima). Inorganic substances forming the inorganic particle include metal oxides (*e.g.* silicon oxides such as silicon dioxide, glasses, aluminum oxide (alumina), titanium oxide, copper oxide, silver oxide, iron oxide Fe₂O₃, Fe₃O₄, zinc oxide, zirconium oxide, magnesium oxide, etc.), and oxide-series ceramics (*e.g.* silicon oxide, alumina, titanium oxide, zirconia, etc.).

B1 is an organic group connecting the carrier particle A to the organic group C, B2 is an organic group connecting the carrier particle A to the hydrophilic or hydrophobic organic group D. With regard to combinations of the carrier (A) and the compound (B), in the case where the carrier (A) is composed of an inorganic substance (such as metal oxides, ceramics), (B) is an organic silicon group-containing compound (page 5, lines 38-40, of Zaima). The organic silicon group-containing compounds include organosilicon compounds (silane coupling agents) having a condensable or hydrolyzable group (*e.g.* a halo-substituted silyl group, a hydroxy-substituted silyl group, an alkoxy-substituted silyl group) and a reactive group (*e.g.* a halogen atom, a hydroxyl group, a mercapto group, a carboxyl group, an amino group, an epoxy group, an isocyanate group, a vinyl group, a (meth)acryloyl group). The organosilicon compounds usually have a condensable or hydrolyzable group as a reactive functional group (b1) reactive to the carrier (A), and a reactive group (b2) reactive to the compound (C) or the compound (D) (page 7, lines 53-58 of Zaima).

C is an organic group having at least one free functional group. As a free functional group of the organic group C, there may be exemplified various functional groups such as oxazoline groups, a cyclic ester group, a cyclic ether group, an isocyanate group, a hydroxyl group, a mercapto group, a carboxyl group, an acid anhydride group, an ester group, an amino group, a formyl group, a carbonyl group, a vinyl group, a hydroxysilyl group, an alkoxysilyl group, a halosilyl group, a hydrosilyl group.

D is a hydrophilic or hydrophobic organic group. As a hydrophilic or hydrophobic organic group D, there may be exemplified (1) alkyl groups, (2) aryl groups, (3) aralkyl

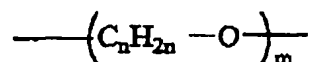
groups, (4) heterocyclic groups, (5) organic groups selected from alkyl groups, aryl groups, aralkyl groups and heterocyclic groups, each having at least one selected from amide bond, urethane bond, urea bond and ester bond, (6) polyoxyalkylene groups, (7) saccharic or saccharide residues (page 9, lines 9-13 of Zaima).

Thus, Zaima fails to disclose “an oxidized compound having a hydrophobic group and a polar group which are directly bonded to a surface thereof” as recited in amended independent claim 1. For this reason, Applicants submit that Zaima cannot anticipate claim 1 or any claim depending therefrom.

Furthermore, as described in more detail below, Applicants submit that the polyoxyalkylene of Zaima constitutes a polar group and, thus, Zaima fails to disclose “a group -OR, in which R represents a non-polarized group” as set forth in independent claim 1.

Specifically, Zaima’s hydrophobic organic group D is bonded to the carrier particle A through the organic group B2 (an organic silicon group-containing compound), thereby the substituent [(B2)_p - D] must have polarity.

In paragraph 7 of the Office Action, the PTO stated that polyoxyalkylene corresponds to the group -OR of the present invention. However, Applicants note that polyoxyalkylene group is the following substituent:



Thus, polyoxyalkylene group is a polar group, and the polyoxyalkylene group is different from the group -OR of the present invention.

For this additional reason, Applicants submit that Zaima cannot properly anticipate claim 1 or claims 2-9, 11-13, or 49, which depend therefrom.

In view of the foregoing, Applicants respectfully request reconsideration and withdrawal of the outstanding rejection under § 102.

Rejection Under 35 U.S.C. § 103

On page 4 of the Office Action, the PTO has maintained its rejection of claim 10 under 35 U.S.C. § 103(a) as allegedly being unpatentable over Zaima. Applicants traverse this rejection for the reasons set forth below.

In order to establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, prior art references must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in Applicants' disclosure. *In re Vaeck*, 947 F.2d 488, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991).

Here, as discussed in more detail above, Zaima fails to teach or suggest "an oxidized compound having a hydrophobic group and a polar group which are directly bonded to a surface thereof" or "a group -OR, in which R represents a non-polarized group" as recited in independent claim 1, from which claim 10 depends. For this reason alone, Applicants submit that the outstanding rejection based upon Zaima is improper and ought to be withdrawn.

In view of the foregoing, Applicants respectfully request reconsideration and withdrawal of the outstanding rejection under § 103.

CONCLUSION

Applicants believe that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested.

The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by a check or credit card payment form being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicant hereby petitions for such extension under 37 C.F.R. § 1.136 and authorizes payment of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,


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